

## System 7674799AC

**Alternator/electronic ignition for Bultaco 250/350**

- Rotor 2 kg, nut M18

- Suitable for **Alpina, Metralla, Sherpa, and Matador. Mercurio** with crankshaft nut M18

- Light magneto ignition system with integrated fully electronic ignition. Light output 12V/70W alternating current. Contactless electronic ignition with its own power supply within the system. Replaces the old light ignition system. No modifications to your engine housing are required.



- **IMPORTANT:** The AC system is designed for use in off-road sports (and not in road traffic)!

- The system **does not support battery charging or direction indicators (turn signals)**. In addition, an **AC horn** must be used. Can also be driven without a controller (simply omit it). If the vehicle is to be used in road traffic, the DC version 7674799DC must be used.

**Advantages over the old system:**

- All parts are new
- Significantly brighter light
- Very stable ignition with high-energy spark
- Better start and better combustion
- No more wear on the breaker

<b>Installation instructions for PD Bultaco systems with AC regulator</b>	<b>11.9.2025</b>
<p><b>- If you can install and adjust the original ignition and have general mechanical skills, you can also install a VAPE system. If you have never dealt with this before, it is better to have the system installed by someone who is familiar with it.</b></p>	
<p>- VAPE cannot monitor compliance with these instructions or the conditions and methods of installation, operation, use, and maintenance of this system. Improper installation can result in property damage or even personal injury. We assume no responsibility or liability for any loss, damage, or expense resulting from or in any way related to incorrect installation, improper operation, or incorrect use and maintenance. We reserve the right to make changes to the product, technical data, or installation and operating instructions without prior notice.</p>	
<p style="text-align: center;"><b><u>IMPORTANT</u></b></p>	
<p><b><u>Be sure to read the entire manual carefully before beginning installation.</u></b>  Please note that unauthorized modifications, including repair attempts, to the parts may void the warranty. This also applies to cutting cables, which often results in the loss of reverse polarity protection and, as a consequence, material damage due to short circuits or reverse polarity. Please note the <b>information on the system information page</b>. Make sure that the system configuration shown actually meets the requirements of your engine. Incorrect ignition values, for example, can damage the engine and/or cause injuries when starting (kickback of the kick starter). Particular caution is required when starting for the first time after installation. If you notice any malfunction, check and change the ignition setting! During installation, check very carefully that the rotor does not rub against the stator coil or anywhere else, which can happen for various reasons and lead to serious damage.</p>	
<p><b>Intended use</b>  - This is a <b>replacement system and not a copy of the original material</b>. The parts of the system therefore look different from the original parts and, in particular, the ignition coil and regulator may have different mounting points that require adjustment by you. This system is intended <b>exclusively</b> as a replacement for original lighting/ignition systems in classic and modern classic motorcycles <b>whose engine characteristics have not been subsequently influenced by design changes</b>. It is not a tuning system, it does not change the original engine characteristics, and it does not achieve significantly higher engine performance. However, it does improve the roadworthiness and safety of the vehicle through better lighting, clearer indicators, a consistently powerful horn, and greater overall reliability compared to the aging original systems. Since our systems do not cause any significant change in the engine characteristics, there is no deterioration in exhaust emissions or noise levels. In most cases, exhaust emissions are likely to improve as a result of more complete combustion.</p>	
<p> - VAPE guarantees homologated products marked with the "E" symbol (specifically for the Czech Republic, E8), which ensures consistent compliance of product characteristics with the relevant ECE homologation regulations (in particular ECE R10.05). Inspections are carried out regularly by the competent authority.</p>	
<p>- The charging system is <b>only suitable for use with rechargeable 12V (6V systems 6V) lead-acid batteries with liquid electrolyte or sealed lead-acid batteries, AGM, gel</b>. It is not suitable for use with nickel-cadmium, nickel-metal hydride, lithium-ion, or other types of rechargeable or non-rechargeable batteries.</p>	
<p>- The system is <b>not suitable for use at sporting events</b>.  The warranty will be void if the system is used for purposes other than those intended. In addition, the system may not perform as you expect, and we will not be able to provide support because we are not familiar with the situation. In the worst- , improper use may even result in the operating license being revoked.</p>	

- **When assembling the parts, be sure to start with the motor-side parts** (adapter, stator, rotor) to determine whether this material really fits before installing the parts that are to be attached outside the motor. Unfortunately, it is often the case that people start by installing the regulator, ignition coil, and control unit (if applicable), and these parts are very often modified (without being coordinated!), which makes it impossible for us to resell them later. Replacing the lighting/ignition systems of old motorcycles is unfortunately not like buying something off the shelf at the supermarket. Given the variety of types and possible changes to the material since they were manufactured many years ago, it is always a complex matter, which unfortunately can also involve errors.

- Our systems have **NOT been tested for use with other electronic components (such as third-party ignitions, navigation systems, cell phones, LED lights, etc.)** and may cause damage to such parts under certain circumstances. Any existing tachometers are not supported by the system. However, we do offer a tachometer solution. Similarly, any circuit breakers or ignition-controlled exhaust controls are not supported. It may also be the case that your original ignition had a speed limiter for legal reasons. The new system does not have such a device. Therefore, please check the legal situation beforehand.

- If you do not have the necessary expertise to install the system, please have it installed by a specialist or a specialist workshop. Improper installation can damage both the new system and the motorcycle, and may even result in injury to the rider.

- Before ordering a system, please check whether the **rotor puller** recommended by us is included in the scope of delivery. If not, it is best to order it at the same time! If the rotor is damaged by using other tools and aids, the warranty claim will be void!

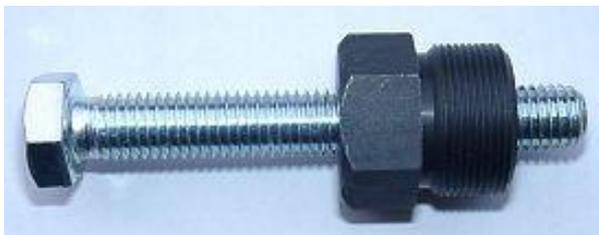
- The rotor is extremely sensitive to impact (e.g., during transport). Always check the rotor for damage before installation. If the magnets are not encapsulated, check that they are securely attached by trying to push them sideways with your fingers. After impact, some of the glued-in magnets may have become loose and are only held in place by their magnetic force. This would cause serious damage to the system during operation. At the same time, please check the magnets of the rotor for foreign objects (e.g., screws or other metallic objects).

- **If you have access to the Internet, it is better to view this documentation online.** You can enlarge most of the images by clicking on them and you will receive more and possibly more up-to-date information. System list at: <http://www.powerdynamo.biz>



**You should have received the following parts:**

- Pre-assembled stator unit
- Rotor (pole wheel)
- Electronic ignition coil and ignition cable with rubber plug (no resistance)
- AC regulator
- Crankshaft nut and 2 washers
- Plug sleeves



- To remove the new rotor again, you will need an M27x1.25 puller (order no.: 99 99 799 00 - **not included in delivery!**).

- **CAUTION:** When using a claw puller, the magnets in the rotor will come loose!

- Make sure that your Bultaco is standing firmly on its stand, preferably on a raised assembly platform, and that you have good access to the alternator side of the engine. Remove all 6-volt bulbs from the headlight, speedometer lighting, and taillight. The old horn can remain in place.



- Now disconnect all cables from your old system and remove them.

- Remove the key from the crankshaft cone using pliers. It is no longer needed! Please do not forget this step, otherwise you will have to remove the alternator again later. Do not worry, the removed key was not used to secure the rotor, but only to prevent it from being inserted incorrectly.



- Take a look at the new stator. You will find one of the above-mentioned markings slightly to the left of the two small black coils, level with the milled recess for the retaining screw. This is a timing mark.

- Place the pre-assembled stator unit on the Bultaco alternator seat. Secure it in place with the three M5 screws. Feed the cable of the new alternator through the cable opening in the engine block to the outside.

**- NOTE:**

If the cable on your Bultaco is routed downwards, please loosen the three stator mounting screws, pull the stator off the bracket and remove the entire cable from the opening. Then feed the cable through the other (left) opening, replace the stator and secure it with the three M4x25 screws! Please ensure that the stator is seated straight again and that no cables are pinched. Please remember that the ignition mark must be offset by 120° (counterclockwise).



- Take a look at the new rotor. You will find a line marking on the edge of its surface. This is also an ignition marking. At the moment of ignition, both are aligned.

- Remove the spark plug. Fit the new rotor onto the crankshaft by hand so that you can turn the shaft with it. Move the piston to the ignition timing position. Please refer to your motorcycle's operating manual for the correct value. If you do not have a value, try 2-2.5 mm before TDC first. However, please check the operating behavior and change the setting if necessary.

- Remember that your engine rotates counterclockwise.

- Now pull the rotor off the crankshaft and then put it back on the crankshaft so that the two markings line up. During this operation, make sure that the crankshaft does not twist (the magnets tend to pull sideways). If anything twists, please start again. In this position, screw the rotor tight using the new retaining nut. If necessary, place a washer underneath.

- Don't worry, the removed key was not intended to secure the rotor, but only to prevent it from being inserted incorrectly. Now you have the mark and the sensor core.

- The ignition is now set. If necessary, it can theoretically be changed as desired by removing the rotor and reattaching it at an angle to this basic setting. For fine adjustment, the entire alternator is rotated in the slotted holes on the engine block as before.



- Attach the new electronic ignition coil to the frame of the motorcycle, e.g., to the same bracket that held the original ignition coil, making any necessary adjustments as the hole spacing may be different.



- Attach the electronic AC regulator to a suitable location on the frame.

Connect the cables as shown in the 73ik-ac circuit diagram, i.e.:	
<p>- To make it easier to feed the cable through narrow openings, or to enable this in the first place, the plug on the cable leading to the new ignition coil has not yet been connected to the contact tabs at the end of the cable. You should only attach the plug once the cable has been fed through the engine opening. To do this...</p>	
	<p>...take the female connector of the ignition coil with the cable colors yellow, red, and brown.</p> <p>- Plug the loose 4-pin connector sleeve supplied onto this plug and insert the loose cables from the alternator (white, red, and brown) with the contact tabs into the back of the plug. Make sure that the plug tabs snap into the plug housing. It is essential to ensure that these cables are positioned correctly in the plug:</p> <ul style="list-style-type: none"> <li>• yellow to yellow</li> <li>• red goes to red</li> <li>• brown to brown</li> </ul>

	<p>- The two black cables from the new generator ...</p> <p>... are connected to the outer terminals of the new AC controller. It does not matter which cable is connected to which terminal, as alternating current is fed in here.</p>
<p>In addition, ground ...</p>	<p>... from the controller's retaining bracket to the ground distributor. Otherwise, the light will not work.</p>
<p>The (or) power cable(s) from the original vehicle electrical system for the light is/are connected to the middle terminal of the new regulator.</p>	<p>... the power cable(s) from the original vehicle electrical system for the light.</p>
<p>- The blue (sometimes blue/white) cable from the ignition coil remains - the switch-off cable.</p> <p style="text-align: center;"><b>Note:</b></p> <p>In the event of ignition problems, first disconnect this cable (pull out the plug). In most cases, you will then be able to continue your journey</p>	<p><b>- If it is connected to ground, the ignition will switch off!</b></p> <p>- We use this circuit variant in vehicles that originally had magneto ignition (pole wheel) and thus also switched off due to a short circuit to ground.</p> <p>- These vehicles have a terminal on the ignition switch (on German vehicles: terminal 2) which is connected to ground in the "OFF" position. The blue (/white) cable is connected to this terminal. This switches off the ignition as before.</p>

<p>- The high-voltage cable (ignition cable) ...</p> <p>Please <b>do not use</b> "Nology Supercables" ("hot wire"). These cause interference in VAPE systems and can damage the electronics.</p>	<p>... screw into the ignition coil and place the rubber cap over it. This is easier to do before installing the coil on the vehicle. Please use the ignition cable supplied and not an old, undefined cable.</p>
<p>- You will be doing yourself a favor if you install new spark plugs and new spark plug connectors (preferably with 1-2, but no more than 5 kilohms) on your motorcycle at this point. More than enough malfunctions can be traced back to "seemingly good" cables, spark plugs, and connectors (including brand new ones)!</p> <p>- <b>Do not use</b> spark plugs with internal interference suppression resistors <b>together</b> with interference-suppressed spark plug connectors (this results in double resistance). Always use only one interference suppression method.</p>	
<p>- Finally, <b>before installing the battery and starting the engine for the first time</b>, please take your time to check all fastenings and wiring. Remember to replace all bulbs from 6 to 12 volts. Also remember that you will now need a 12V battery. The horn can remain at 6 volts.</p> <p>- If the system does not work immediately, please consult our troubleshooting page. As a first step, disconnect the blue cable between the relay and the ignition coil (remove the contact); most faults are hidden in the switch-off area.</p>	
<p>- <b>IMPORTANT</b>: Please note that if <b>the crankshaft has been regenerated</b> (previously), its alternator pin has been over-turned and is now shorter. This causes the rotor to be lower, which can result in contact between the rotor (the rivets are the lowest point) and the stator coil. The result is a destroyed stator and thus ignition failure.</p>	

<b>Important safety and operating instructions for alternating current systems (AC systems)</b>	
<p>- In terms of functionality, DC controllers (actually rectifiers and controllers in one) are the better solution. They can handle higher loads and are more versatile.</p> <p>- <b>The only advantage of the AC regulator</b> is its small size. This is useful in systems</p> <ul style="list-style-type: none"> <li>• <b>for</b> classic cars where the DC regulator is difficult to install. The AC regulator can also be mounted in the headlight housing, for example.</li> <li>• <b>for</b> pure off-road sports motorcycles, which usually offer little opportunity to install the relatively heavy DC regulator.</li> </ul>	
	<p>- However, this advantage is accompanied by a number of <b>disadvantages of the AC regulator</b>, which <b>are also relevant from a legal perspective and</b> are inherent in the nature of alternating current.</p> <ul style="list-style-type: none"> <li>▪ No on-board battery can be used.</li> <li>▪ No turn signals can be used (unless an AC turn signal generator is installed, which has some special features, including legal ones).</li> <li>▪ No normal DC horn can be used (it would not produce any sound with AC). However, there are also AC horns, but these also have some special features.</li> <li>▪ In addition, the regulator can only handle a maximum load of 70 watts, even if the alternator would deliver more.</li> </ul>

**Important safety and operating instructions - MUST be read and observed in full!**

- Observe the safety instructions and requirements specified by the vehicle manufacturer and the automotive trade. Installation requires specialist knowledge.

The ignition markings applied to the material are for orientation purposes only during installation. After installation, please check the correctness of your settings using suitable methods (stroboscope) to prevent damage to the engine or hazards to your health. You are solely responsible for installation and correct settings.

- Caution Ignition systems generate high voltage, danger to life! Our ignition coils generate up to 40,000 volts! Careless handling can not only cause severe pain, but can also be harmful to the heart! People with pacemakers should not work on ignition systems. Always maintain a safe distance from the electrode and open high-voltage cables, and when testing, press the spark plug connector firmly to ground with an insulating object to safely discharge the voltage. Never pull a spark plug connector to synchronize the carburetor! Never disconnect or touch ignition cables while the engine is running or at starting speed. Only wash the vehicle when the engine is not running.

- If your VAPE ignition cable was supplied with rubber spark plug connectors attached (*which do not have a built-in interference suppression resistor*), please use spark plugs with a built-in resistor (*to comply with local laws regarding electromagnetic compatibility requirements*). Alternatively, replace the cable(s) with normal ones and use shielded spark plug connectors (*under no circumstances should you use interference-suppressed spark plugs AND interference-suppressed spark plug connectors at the same time. This would lead to interference, especially difficulty starting the engine*). The total resistance of the spark plug/spark plug connector combination should not exceed 5kOhm.

- Remember that spark plug connectors age and increase their resistance. If an engine only starts when cold, it is almost certain that the cause is a defective spark plug connector or spark plug. Do not use so-called ignition-enhancing cables (e.g., Nology).

- After installation, be sure to check that all retaining screws are tight. If the parts become loose, they will be destroyed. We only tighten the screws loosely during pre-assembly!

- Give the newly installed system a chance to start up before you begin measuring and testing everything. Please also note our instructions on how to check for sparks. All our parts are checked before delivery. There is hardly anything you can measure anyway. Under no circumstances should you measure the electronic parts (including the ignition coil, except for its high-voltage output). You risk destroying them and will still not produce any useful results!

Remember that if the engine does not run immediately, the problem may often lie with the carburetor, the intake rubber, and, above all, the spark plug connectors and spark plugs (unfortunately, even completely new ones). (As a rule, the settings must also be changed after installing the Lima.) If the system does not run immediately, check the ground connections, especially between the ground of the chassis and the engine block.

Before you remove the parts again and send them to us for testing, check our knowledge database to see if there is already an answer to your problem. If not, use our service ticket system to request specific help.

- If you have a system with a double ignition coil, please note some special features of this coil. The ignition will only work correctly if both spark plugs are connected to the coils. This means that you cannot even remove one spark plug to test it, because each output draws power from the other spark plug's ground. If you really only want to test one side, the other coil output must be connected to ground.

- The spark produced by classic breaker systems has a low energy of approx. 10,000 volts and therefore appears yellow and thick. The spark produced by our systems is a high-energy spark of up to 40,000 volts and is therefore very sharply focused and blue, which makes it less visible. In addition, the spark is only generated at kickstarter speeds. Simply pressing the kickstarter lever by hand does not produce a spark.

- Most of our systems are ignition and light current generators in one. This can be recognized by the presence of a regulator. Apart from the voltage output by the regulator, there is little else you can measure on the regulator. If you are not getting any power, check the ground connections and the wiring from the regulator to the ignition switch. This important connection is often cut and overlooked during installation! Most PD systems have DC regulators/rectifiers. However, there are also AC regulators, which have special features that need to be taken into account.

- Never perform electric welding on the vehicle without first completely disconnecting all electronic parts containing semiconductors (regulator, ignition coil, and control unit). The stator and rotor do not need to be removed. Only solder with soldering equipment that is operated via series transformers or unplug the soldering iron before soldering to avoid damage to the parts due to overvoltage. Never use copper paste on connectors or spark plugs.

- Electronics are sensitive to reverse polarity. After making any changes to the system, always check that the battery is connected correctly and that the wiring is correct. Reverse polarity and short circuits will destroy the controller and the ignition coil immediately! As a rule, color is always connected to color when wiring. Exceptions are expressly mentioned in the instructions. Damage caused by reverse polarity is not covered by the warranty.

- When installing the rotor, please take care not to damage the magnets. Avoid direct mechanical impact on the rotor. **Never place the stator in the rotor when transporting the Lima**; follow our shipping instructions (packaging).

- Lightly oil the outside of the rotor, otherwise it will rust quickly in the aggressive environment (which is not harmful, but looks unsightly).

- Never use a claw puller or hammer to remove the rotor. This can cause the magnets to come loose. Always use only an M27x1.25 screw-in puller (see installation instructions).

- If your vehicle is not used for a long period of time, you should disconnect the battery (if present) to prevent any slow discharge via the rectifier diodes. However, even with the battery disconnected, you will notice that it discharges after a long period of time; this is normal.

- Please note these instructions, but don't let them unsettle you. Thousands of customers before you have already successfully installed our systems.

***Good luck and enjoy driving!***



# Schaltplan 73ik-ac (wiring diagram)

